TECHNICAL SUPPORT DOCUMENT

Air Quality Control Permit No. 47943

General Motors Desert Proving Ground – Yuma

I. INTRODUCTION

Permit Number 47943 is a new Air Quality Control Permit for a new facility which is being constructed near Yuma, Arizona. The permit is issued to General Motors Corporation for the operation of propane-fired equipment (heating ventilation air conditioning (HVAC) units) and water heaters), gas and diesel fuel storage tanks, a diesel-fired emergency fire water pump and an emergency propane-fired, spark-ignition generator.

Company Information:

1.	Facility Address:	General Motors Corporation General Motors Desert Proving Grounds - Yuma 1500 East GM Drive Yuma, Arizona 85365
2.	Mailing Address:	General Motors Corporation General Motors Desert Proving Grounds - Yuma 1500 East GM Drive Yuma, Arizona 85365

The Yuma planning area is a federally designated moderate PM_{10} non-attainment area, corresponding roughly to the urban area of western Yuma County. It is about 456 square miles in size with a population of approximately 110,000.

II. FACILITY DESCRIPTION

The General Motors Desert Proving Ground – Yuma facility is located northeast of Yuma, Arizona, off Highway 95, near Middle Mountain Road. The facility has two (2) propane-fired water heaters, seven (7) propane-fired HVAC units, one (1) propane-fired spark-ignition emergency generator at 168 horsepower (hp) and one (1) 252-hp diesel-fired emergency firewater pump. The facility will also has four (4) parts washers.

The facility has nineteen (19) gasoline storage tanks with a capacity greater than 250 gallons and with a combined total throughput of greater than 10,000 gallons per month.

The equipment covered under this permit can be found in Attachment "C" of the permit.

III. LEARNING SITES IN VICINITY

In accordance with ADEQ's Environmental Permits and Approvals near Learning Sites Policy, the Department conducted an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter

schools and private schools at the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

There are no learning sites within a two-mile radius of the General Motors Desert Proving Grounds – Yuma located at 1500 East GM Drive, Yuma, Arizona 85365.

IV. EMISSIONS

When operating all equipment (including the emergency equipment) for 8,760 hours per year, the facility has a potential to emit greater than significance thresholds. This facility is permitted to operate the two emergency engines, one, a diesel-fired emergency fire water pump at 252 hp, and the other, a spark-ignition propane-fired generator at 168 hp, for 100 hours each of maintenance testing per year. Additional maintenance and testing hours may be requested with justification and there is no limit to the emergency operation of the engines.

Facility-wide potential-to-emit (PTE) is given in Table 1 below:

Table 1: Facility-wide Potential-To-Emit (PTE)

Pollutant	Propane-fired Equipment (8760 hours/yr)	Diesel Fire Water Pump (8760 hours/yr)	Propane-fired Generator (8760 hours/yr)	Fuel Storage Tanks	TOTAL
Units	tpy	tpy	tpy	tpy	tpy
CO	0.75	7.40	2.13		10.28
NO_x	4.45	34.22	15.16		53.82
SO_2	0.0004	2.21	0.0032		2.21
PM_{10}	0.28	2.43	0.05		2.76
VOC	0.07	2.76	0.62	24.70	28.15

V. APPLICABLE REGULATIONS

The applicable regulations were identified by the agency as part of the permit review process. If necessary, the source is required to list any additional regulations that maybe applicable.

Table 2: Verification of Applicable Regulations

Unit	Rule	Verification
Propane-fired equipment	A.A.C. R18-2-724	This standard is applicable to all propane-fired equipment.
Propane-fired Spark-ignition Emergency Generator Internal Combustion Engine	A.A.C. R18-2-719	This standard is applicable to all internal combustion (IC) engines not subject to specific federal regulations. Standards of Performance for New Stationary Sources 40 CFR 60 Subpart JJJJ does not apply since the date of manufacture for this emergency engine is June 23, 2008 which is before January 1, 2009 per 40 CFR § 60.4230(a)(3)(iv).

Unit	Rule	Verification
Propane-fired Spark-ignition Emergency Generator IC Engine	40 CFR § 63.6500 Subpart ZZZZ	This engine is an affected facility under the Standards of Performance for New Stationary Sources 40 CFR 63 Subpart ZZZZ; however since it is not part of a major source and the horsepower rating is below 250, then there are no applicable Subpart ZZZZ requirements for this engine.
Diesel-fired Compression Ignition Emergency Fire Water Pump Engine	40 CFR § 60.4200 Subpart IIII	This Standard of Performance for New Stationary Sources for Compression Ignition (CI) Internal Combustion Engines applies to engines having a date of construction (order date) after July 11, 2005 and a manufacture date for fire pump engines after July 1, 2006.
Diesel-fired Compression Ignition Emergency Fire Water Pump Engine	40 CFR § 63.6500 Subpart ZZZZ	Since Subpart IIII applied to the above engine then per 40 CFR § 63.6590(c) this new emergency 252-hp engine, in an area source of HAP, is not subject to Subpart ZZZZ.
Gasoline Storage Tanks	40 CFR § 63 Subpart CCCCCC	This National Emissions Standard is applicable to Gasoline Dispensing Facilities with a monthly throughput of over 10,000 gallons of gasoline per 40 CFR § 63.1111(c) with the specific requirements found in 40 CFR § 63.11117.
Gasoline Storage Tanks	40 CFR § 63 Subpart BBBBBB	This National Emissions Standard is not applicable to the facility since the subject category would be a "*Bulk Gasoline Plant*". The definition of a "Bulk Gasoline Plant means any gasoline storage and distribution facility that receives gasoline by pipeline, ship or barge, or cargo tank and has a gasoline throughput of less than 20,000 gallons of gasoline per day." This facility is a dispensing facility not a *distribution* facility so this subpart does not apply.
Parts Washers	A.A.C. R18-2-730	This standard is applicable to unclassified sources.
Fugitive Dust	Article 6	This Article is applicable to any fugitive dust source.
Mobile Sources	Article 8	This Article is applicable to off-road mobile sources which either move while emitting air pollutants or are frequently moved during the course of their utilization.
Spray Painting Operations	A.A.C. R-18-2-727	This standard is applicable to any spray painting operation.
Demolition/Renovation Operations	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

VI. MONITORING AND RECORDKEEPING REQUIREMENTS

A. Propane Emergency Generator

A certified EPA Reference Method 9 observer must conduct a survey of visible emissions emanating from the stack of the propane-fired emergency generator once every quarter year. If the opacity of the emissions observed appears to exceed the standard, the observer must conduct a certified EPA Reference Method 9 observation. The Permittee must keep records of the initial survey and any EPA Reference Method 9 observations performed. If the observation results in a Method 9 opacity reading in excess of 40%, the Permittee must report this to ADEQ as excess emission and initiate appropriate corrective action to reduce the opacity below 40%. The Permittee must keep a record of the corrective action performed.

B. Fugitive Dust

A certified EPA Reference Method 9 observer must conduct a quarterly survey of visible emissions emanating from fugitive dust sources. If the opacity of the emissions observed appears to exceed the standard, the observer must conduct a certified EPA Reference Method 9 observation. The Permittee must keep records of the initial survey and any EPA Reference Method 9 observations performed. If the observation results in a Method 9 opacity reading in excess of 40%, the Permittee must report this to ADEQ as excess emission and initiate appropriate corrective action to reduce the opacity below 40%. The Permittee must keep a record of the corrective action performed. Should the source of the fugitive dust be determined as originating off-site, such observation must be documented and no further action will be required.

C. Emergency Diesel Engine

The Permittee is required to maintain monthly records of engine operation. The records must include the purposes of operation and duration of time the engine has operated.

D. Gasoline Storage Tanks

The Permittee is required to maintain monthly records of the throughput of gasoline fuel delivered to the facility.

F. Sulfur Fuel Content of Propane Fired Engines

The Permittee may record the sulfur content and lower heating value of the propane fuel at each delivery and use this value as the sulfur content and lower heating value when the engine is being operated on a daily basis.

VII. IMPACTS TO AMBIENT AIR QUALITY

A dispersion modeling analysis was conducted by the Permittee to demonstrate compliance with National Ambient Air Quality Standard (NAAQS) based on the PTE for 8,760 hours of equipment operation per year. Actual emissions are expected to be lower. The modeling analysis design, input parameters, and results were submitted in a report entitled *Air Dispersion Modeling for General Motors Desert Proving Ground – Yuma* dated July 14, 2008, and were reviewed by

the Arizona Department of Environmental Quality (ADEQ). In the submitted report, the selected modeling analysis employed the EPA, SCREEN 3 air dispersion model which uses Gaussian dispersion equations combined with worst case meteorological conditions to estimate downwind concentrations due to the emissions for this source. As shown in Table 3, the modeling analysis referenced above demonstrated compliance with the NAAQS.

Table 3: Summary of Maximum Modeled Concentrations and NAAQS Compliance

Pollutant	Facility Wide Emission Rate (g/s)	Max Ground Level Conc. at Property Line ($\mu g/m^3$)	Averaging Period	Background Concentration ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Total Impact (% of Standard)
CO	0.0769	52.5	8-hour	1260	1300	10,000	12.97%
			1-hour	2810	2860	40,000	7.15%
NOx	0.638	426	Annual	19.6	53.6	100	53.62%
PM_{10}	0.0153	10.6	24-hour	120	124	150	82.59%
SO_2	0.00178	2.14	Annual	7.86	8.03	80	10.04%
			24-hour	2.71	28	365	7.66%
			3-hour	4.72	49.1	1300	3.78%
VOC	0.0567	33.8	Annual	NA	NA	NA	NA

VII. INSIGNIFICANT ACTIVITIES

The following activities are deemed as "insignificant". According to A.A.C. R18-2-101.57, for an activity to be deemed "insignificant", there should be no applicable requirement for the activity.

Table 4: Insignificant Activities

Activity	Insignificant Yes/No	Reason and Applicable Regulation
350-gallon diesel fuel – AST # 4	Yes	Diesel storage – A.A.C. R18-2-101.57(c)
12,000-gallon diesel fuel – UST # 9	Yes	Diesel storage – A.A.C. R18-2-101.57(c)
300 gallon diesel fuel – emergency fire water pump fuel	Yes	Diesel storage – A.A.C. R18-2-101.57(c)
6,000-gallon propane fuel tank	Yes	No applicable rules in A.A.C. R18-2-101.57
Two 1,000-gallon used oil tanks	Yes	No applicable rules in A.A.C. R18-2-101.57
Landscaping, building, maintenance or janitorial activities	Yes	A.A.C. R18-2-101.57(a)

Hand held or manually operated miscellaneous equipment	Yes	A.A.C. R18-2-101.57(f)
Lab equipment for chemical and physical analysis	Yes	A.A.C. R18-2-101.57(i)

VIII. LIST OF ABBREVIATIONS

A.A.C. ..... Arizona Administrative Code
ADEQ ..... Arizona Department of Environmental Quality
AQD ..... Air Quality Division
CO ..... Carbon Monoxide
hp ..... Horsepower
hr ..... Hour
IC ..... Internal Combustion
lb ..... Pound
m ..... Meter
NO_x ..... Nitrogen Oxide
PM ..... Particulate Matter
PM_{10} ..... Particulate Matter Nominally less than 10 Micrometers
PTE ..... Potential-to-Emit
SO_2 ..... Sulfur Dioxide
TPY ..... Tons per Year
VOC ..... Volatile Organic Compound
yr ..... Year